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IS 15753 (2007): Automotive tyres - Tyre curing bladder - Cold process [TED 7: Automotive Tyres, Tubes and Rims]

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स्वचल टायर — टायर क्यूरिंग ब्लाडर — अतप्त प्रक्रिया

Indian Standard

AUTOMOTIVE TYRES—
TYRE CURING BLADDER— COLD PROCESS

ICS 83.160.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 2007 **Price Group 1**

Automotive Tyres, Tubes and Rims Sectional Committee, TED 7

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Tyres, Tubes and Rims Sectional Committee had been approved by the Transport Engineering Division Council.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values *(revised)'*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

AUTOMOTIVE TYRES—
TYRE CURING BLADDER — COLD PROCESS

1 SCOPE

This standard prescribes requirements and methods of testing for tyre curing bladder by cold process,

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated beiow:

IS No.	*Title*
3400	Methods of test for vulcanized rubber:
(Part 1): 1987	Tensile stress-strain properties *(second revision)*
(Part 2): 2003	Rubber, vulcanized or thermoplastic—Determination of hardness'(Hardness between 10IRHD and 100IRHD) *(third revision)*
(Part 4): 1987	Accelerated ageing *(second revision)*
(Part 17): 1974	Tear strength — Angular test piece
(Part 22): 1984	Chemical analysis
9081: 2001	Automotive vehicles — Valves and valve accessories for pneumatic tyres — Specification *(third revision)*
10939:2000	Designation system for tyre tube valves for automotive vehicle *(first revision)*

3 TEST REQUIREMENTS

Minimum one sample shall be tested for the following requirements.

3.1 Visual Examination and Workmanship

The tyre curing bladder shall be free from any defect which may affect the appearance or impair its serviceability such as separation of bond or adhesion around the valve stem, air pockets, or visible lack of adhesion in butt or lap splices, incorrect or damaged valves, and air bubbles, cracks or other faults in its outer surface when installed in the tyre, which in turn, is used for it's intended purpose. Inflated bladder shall not show any air leakage when tested as defined in 3.3.

3.2 The tyre curing bladder shall have uniform thickness and shall be symmetrical in shape and designed to fit properly hi tyres.

3.3 The tyre curing bladder with valve shall be inflated and tested under water for evidence of any leakage on the bladder surface, joints and through valve. Tyre curing bladder shall not show any leakage or defective workmanship which may impair air tightness. Failing to meet this requirement the bladder shall be considered for rejection.

3.4 Bulging

When tyre curing bladder is inflated to just round out, the cross-sectional diameter shall be measured at four places at 90° intervals away from joints. The variation in cross-sectional diameter shall not be more than 10 percent of the specified value.

3.5 Minimum Permissible Thickness

The thickness of the bladder at any point shall not be less than 3 mm of the average gauge of the 16 readings taken on the test specimen. Measure the thickness of the specimen using dial thickness gauge. The thickness of each test specimen shall be gauged at each of four points, that is, crown centre, base centre, right side wall centre and left side wall centre.

3.6 Outside Cross-Sectional Periphery

Outside cross-sectional periphery (Girth) of the curing bladder shall be 490 to 540 mm.

3.6.1 To determine conformity to above, avoiding splice and vent areas, four specimens each 25 mm wide, shall be cut squarely across the bladder. The first shall be cut some distance away from the valve and the other three shall be cut at 90° intervals there from. Each of the four 25 mm wide rings shall be laid on flat surface in the original moulded shape of the bladder cross-section and measured with a flat steel tape, around the outside of the section. The average of four measurements shall be taken as the outside cross-sectional periphery.

3.6.2 Each of the four specimens obtained shall be cut squarely across the width away from the centre of the base or centre of the crown. They shall be laid on a flat surface, with what was part of the outside diameter and the inner tube uppermost. These four surfaces shall be measured for length and their average taken as the cross-sectional periphery**.**

3.7 Valve

Tyre curing bladder shall be equipped with suitable valve conforming to IS 10939.

3.8 Material

Tyre curing bladder in various sizes shall be made from an appropriate rubber composition having excellent heat air ageing properties in air, steam water, hot flex properties and resistance to growth in service. The finished product shall be usable for 80 curing minimum. The rubber hydrocarbon content shall not be less than 55 percent by weight.

3.9 Test Method

The sample shall conform to the requirements when tested as per Table I. Tyre curing envelop shall be symmetrical in shape and designed to fit appropriately on the tyres. The dimensions shall be such that it meets the requirement of the curing process.

4 MARKING

The curing bladder shall be permanently and legibly marked with the following:

a) Size;
b) Batch No./Lot No.; and
c) Manufactures name/ trade-mark.

5 PACKING

Material shall be suitably packed to avoid damage during transit/handling. The packing shall be mutually agreed to between the manufacturer and the purchaser.

6 BIS CERTIFICATION MARKING

The product may also be marked with the Standard Mark.

6.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 1986 and the Rule* and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Table 1 Tyre Curing Envelop

(Clause 3.9)

Sl No. (1)	**Characteristic** (2)	**requirement** (3)	**Method of Test. Ref to IS** (4)
i)	Visual examination	Markings shall be permanently engraved as detailed in **4.1**	-
ii)	Air tightness	No air leakage shall be observed from the tube or valve	-
iii)	Thickness, mm, *Min*	3.0	-
iv)	Ash content, *Max*	4.0	3400 (Part 22)
v)	Rubber hydrocarbon content, percent, *Min*	55.0	-
vi)	Specific gravity	1.10-1.14	-
vii)	Hardness shore, *A, Max*	60	3400 (Part 2)
viii)	Pull out strength of rubber base for valve breaking load, N, *Min*	1716	9081
ix)	Tensile strength MPa, *Min*	9.81	3400 (Part 1)
x)	Elongation at break, percent, *Min*	525	do
xi)	Strength of splice, MPa, *Min*	7.85	do
xii)	Change in physical properties after accelerated ageing at 170 ± 2°C for 24 h:		3400 (Part 4)
	a) Tensile strength , percent, *Max*	80	3400 (Part 1)
	b) Elongation at break, percent, *Max*	50	3400 (Part 1)
xiii)	Tension set (50 percent elongation at 170 ± 3°C for 8 h), *Max*	80	3400 (Part 17)

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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